

## REMARKS

Claims 1-243 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein and the Request for Continued Examination filed herewith.

### REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3-23, 75, 77-97, 187-188 and 240-243 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al. (U.S. Pat. No. 6,853,568), Riggio et al. (U.S. Pat. No. 6,493,242) and Wittenbreder, Jr. (U.S. Pat. No. 5,402,329). Claims 2, 76 and 155-172 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al, Riggio et al., Wittenbreder and A.F. Podell (U.S. Pat. No. 3,529,233). These rejections are respectfully traversed.

With respect to Claim 1, the Examiner improperly uses hindsight to pick and choose portions of Li, Riggio and Wittenbreder to arrive at the features of Claim 1 and provides insufficient analysis supporting the proposed combination, as is required. The Examiner incorrectly asserts that “there is no requirement that a motivation to make the modification be expressly articulated.” Page 3 of the Office Action. The Supreme Court disagrees. When the references fail to provide a teaching, suggestion or motivation, the Supreme Court recently held that **the Examiner must provide an explicit analysis.** KSR Int’l v. Teleflex Inc., 127 S.Ct. 1727 (2007).

The references do not provide a teaching, suggestion or motivation, and, further, the Li reference even teaches away from the proposed combination. For example, Claim 1 includes commonly wound inductors, whereas Li includes parallel output paths

that each include an inductor, where the inductors are not wound together. As best understood by Applicant, Li teaches that a particular output response may be obtained via parallel output paths. **The parallel path output characteristics that are desired in Li would not be achieved and the system of Li would be rendered inoperable were the inductors wound together.** In other words, Li teaches that components, such as inductors, of the parallel paths are not wound together and teaches away from winding them together. Further, Riggio and Wittenbreder merely teach common power systems that include wound magnetic cores and, otherwise, that have no similarities or teachings that in any way support the combination with Li.

The references, therefore, do not provide an express teaching, suggestion or motivation for the combination proposed by the Examiner. Therefore, the Examiner is required to provide an explicit analysis.

The Examiner has not provided the required explicit analysis. The Examiner merely alleges that:

[I]t would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Li et al.'s voltage regulator for the purpose of increase the efficiency of the voltage regulator circuit.

Page 5 of the Office Action. This brief explanation is insufficient to comply with the type of **explicit analysis** that is required by the Supreme Court. KSR Int'l v. Teleflex Inc. Absent an express teaching or suggestion in the references, the explicit analysis and reasoning **must be supplied by the Examiner**. *Id.* (emphasis added). In other words, the Examiner is required to provide explicit reasoning as to why one skilled in the art would be motivated to construct inductors that are wound together on a common core in communication with two conduction switches that communicate with two respective

freewheeling switches. The Examiner's failure to provide a sufficient basis for picking and choosing from the prior art references is fatal to his obviousness arguments.

Here, the Examiner merely notes that "it would have been obvious to one having ordinary skill in the art" at the time the invention was made to combine the references "for the purpose of increase the efficiency of the voltage regulator circuit" and fails to provide explicit analysis and reasoning as required. As best understood by Applicant, the proposed combination would render the system of Li inoperable, and therefore it is unclear to Applicant exactly how efficiency of Li would be increased.

As mentioned, with respect to Claim 1, Li teaches away from using inductors that are wound together on a common core in communication with two conduction switches that communicate with two respective freewheeling switches. Further, neither Riggio nor Wittenbreder support the proposed combination.

As best understood by Applicant, the Examiner also asserts that Fig. 1 of Li (illustrated below) includes two conducting switches 112, 115 two conductors 114, 117 and two freewheeling switches 113, 116. However, as is evident in Fig. 1 of Li and the related disclosure, **the two inductors are not wound around a common core.**

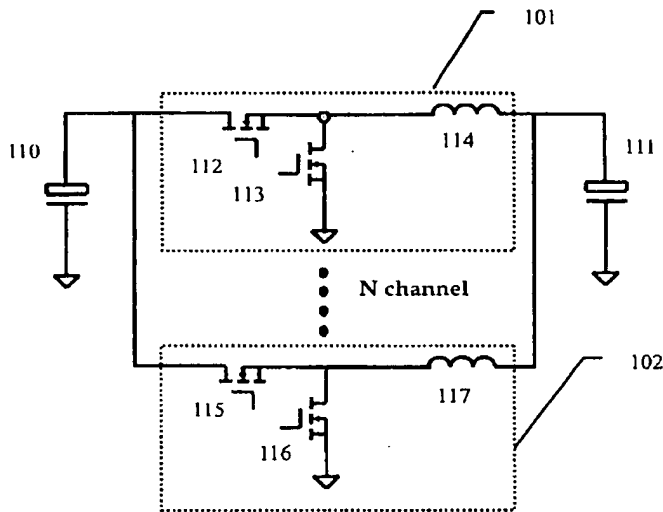
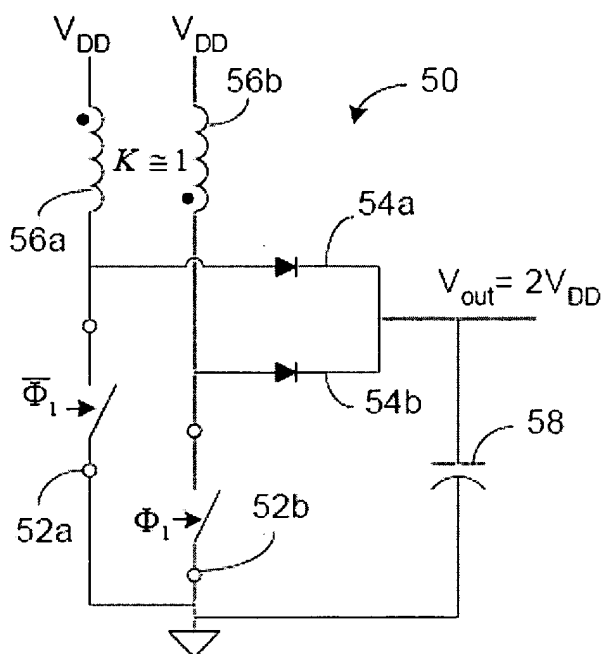


Fig. 1(PRIOR ART)

Instead, Li describes the inductors 114, 117 as output inductors that are connected in parallel and that provide output for the respective power control system. Each of N parallel channels includes an inductor (such as inductors 114, 117) that is connected to a common output. Were the inductors 114, 117 to be wound together as the Examiner proposes, the N channels would then be mutually transferring energy between themselves instead of providing the common output. Li merely provides inductors 114, 117 that provide a parallel inductor output response, which is a teaching away from the proposed combination, which requires commonly wound inductors. Li does not show, teach or suggest that there is mutual inductance between inductors 114, 117.

In contrast, the two inductors 56a, 56b of Claim 1 are wound together on a common core, as illustrated by Fig. 3B of the Application, thereby providing a mutual inductance. The inductors 56a, 56b are also in communication with the two conduction switches 52a, 52b that are likewise in communication with two freewheeling switches 54a, 54b.



**FIG. 3B**

Riggio, as best understood by Applicant, fails to cure the deficiencies of Li. The Examiner includes Riggio to demonstrate a drive circuit having a duty cycle of 50% and not to show the switch inductor configuration as in Claim 1. Riggio merely includes a single switch controlled by a drive circuit that periodically provides control for an inductor. Riggio does not show, teach or suggest that two conductive switches communicate with two inductors that are wound together on a common core. Riggio also does not include two freewheeling switches that communicate with the two conductive switches nor suggests these switches would be in any way beneficial.

Wittenbreder, as best understood by Applicant, fails to cure the deficiencies of Li and Riggio. The Examiner asserts that Wittenbreder demonstrates common core conductors that mutually cancel DC currents and that have a coefficient of coupling equal to one. Wittenbreder does not show, teach or suggest that two conductive

switches communicate with the inductors. Wittenbreder also does not include two freewheeling switches that communicate with the two conductive switches.

“(W)hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious.” When two known elements which form the claimed combination “cannot be combined [in view of the known prior art]...in the manner described” in the claim, the combination is likely to be non-obvious. KSR Int’l v. Teleflex Inc., 550 U.S. \_\_\_\_ (2007). Even if Wittenbreder and Riggio include the wound conductive cores, as asserted by the Examiner, it makes no sense to combine the wound cores of Wittenbreder and Riggio with the parallel channels of Li because Li would be rendered inoperable.


Therefore, Claim 1 is allowable for at least the above reasons. Claims 75, 155, and 164 are allowable for at least similar reasons as Claim 1. Claims 2-23, 76-97, 156-163, 165-172, 187-188, and 240-243 ultimately depend from Claims 1, 75, 155, and 164 and are allowable for at least similar reasons.

## CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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